FIG. 1

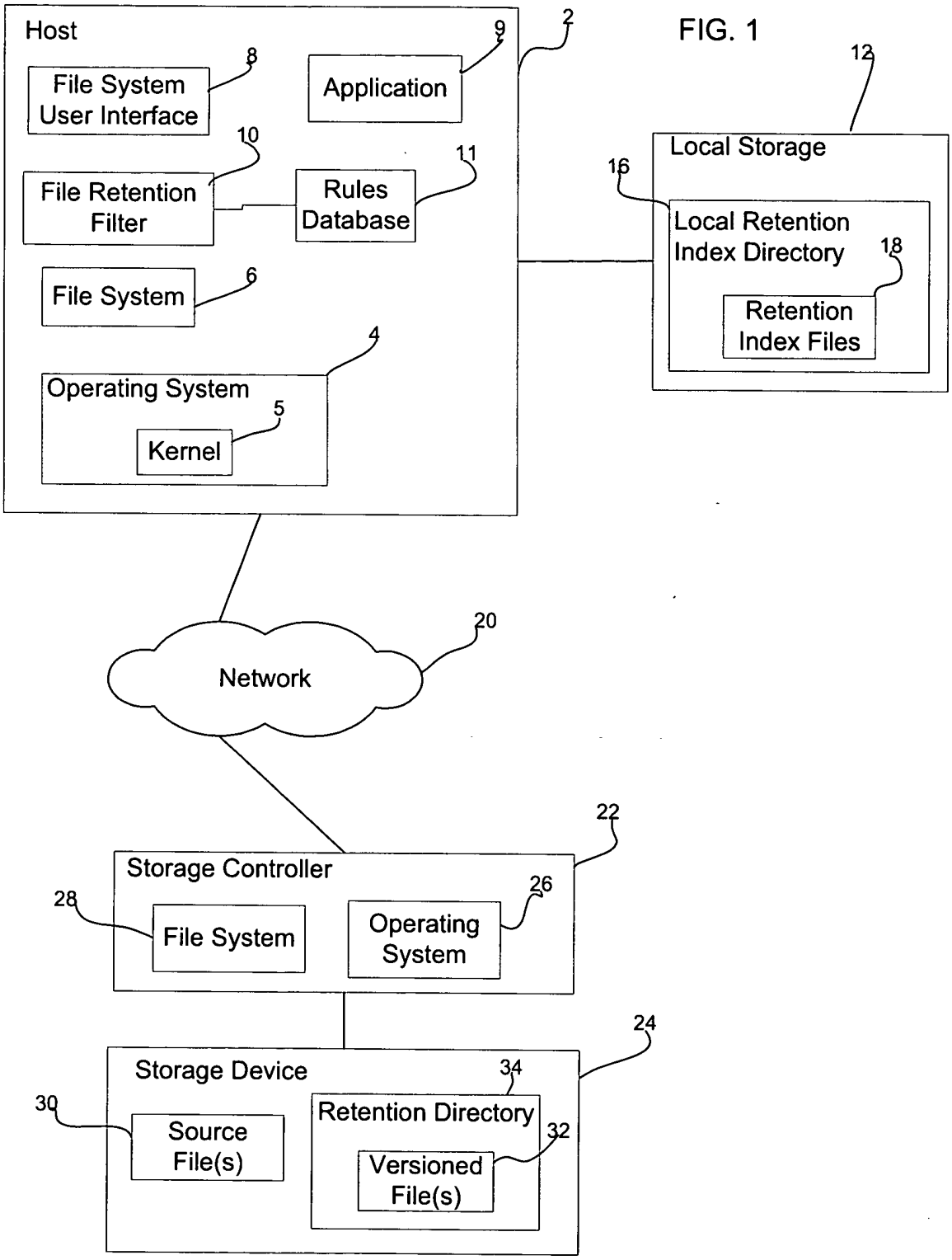

Host
2
9
Application
8
File System User Interface
10
File Retention Filter
11
Rules Database
6
File System
4
Operating System
5
Kernel
12
Local Storage
16
Local Retention Index Directory
18
Retention Index Files
Network
20
22
Storage Controller
28
File System
26
Operating System
24
Storage Device
34
Retention Directory
30
Source File(s)
32
Versioned File(s)

FIG. 2

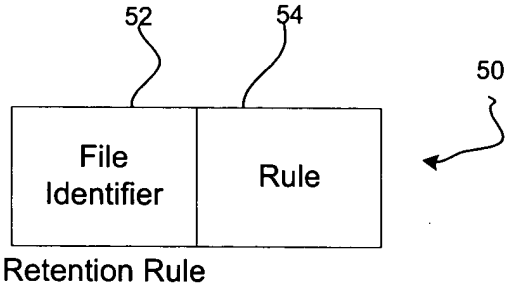

52
54
50
File Identifier
Rule
Retention Rule

FIG. 3

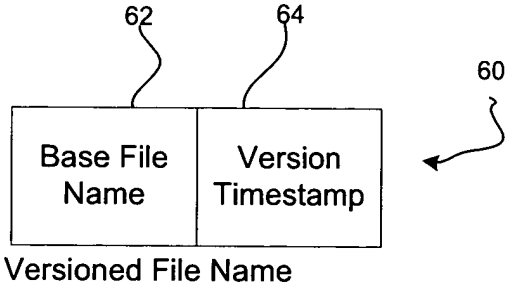

62
64
60
Base File Name
Version Timestamp
Versioned File Name

FIG. 4

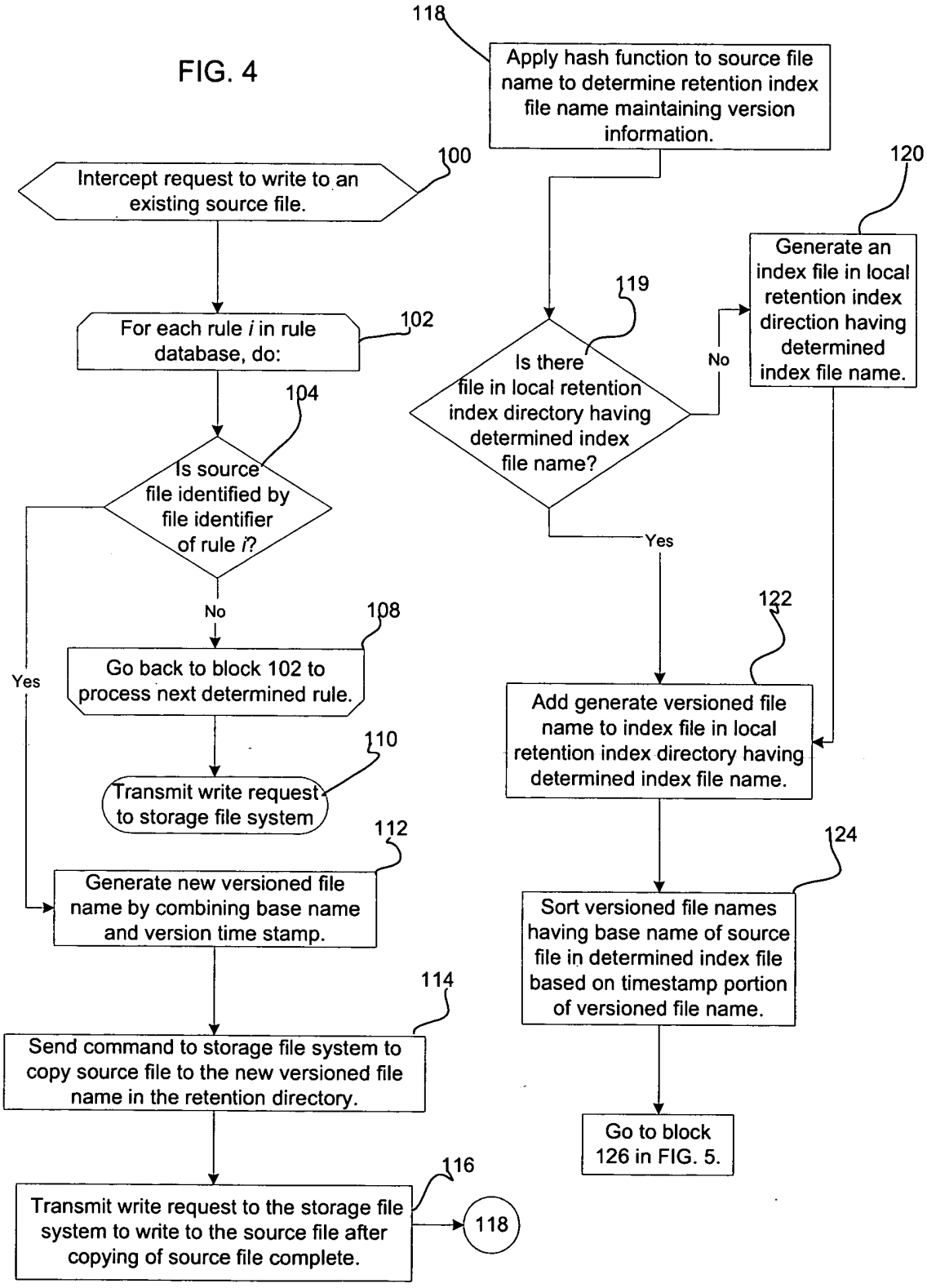

118
Apply hash function to source file name to determine retention index file name maintaining version information.
100
Intercept request to write to an existing source file.
120
Generate an index file in local retention index direction having determined index file name.
119
Is there file in local retention index directory having determined index file name?
No
Yes
For each rule i in rule database, do:
102
104
Is source file identified by file identifier of rule i?
No
Yes
108
Go back to block 102 to process next determined rule.
122
Add generate versioned file name to index file in local retention index directory having determined index file name.
110
Transmit write request to storage file system
112
Generate new versioned file name by combining base name and version time stamp.
124
Sort versioned file names having base name of source file in determined index file based on timestamp portion of versioned file name.
114
Send command to storage file system to copy source file to the new versioned file name in the retention directory.
Go to block 126 in FIG. 5.
116
Transmit write request to the storage file system to write to the source file after copying of source file complete.
118

FIG. 5

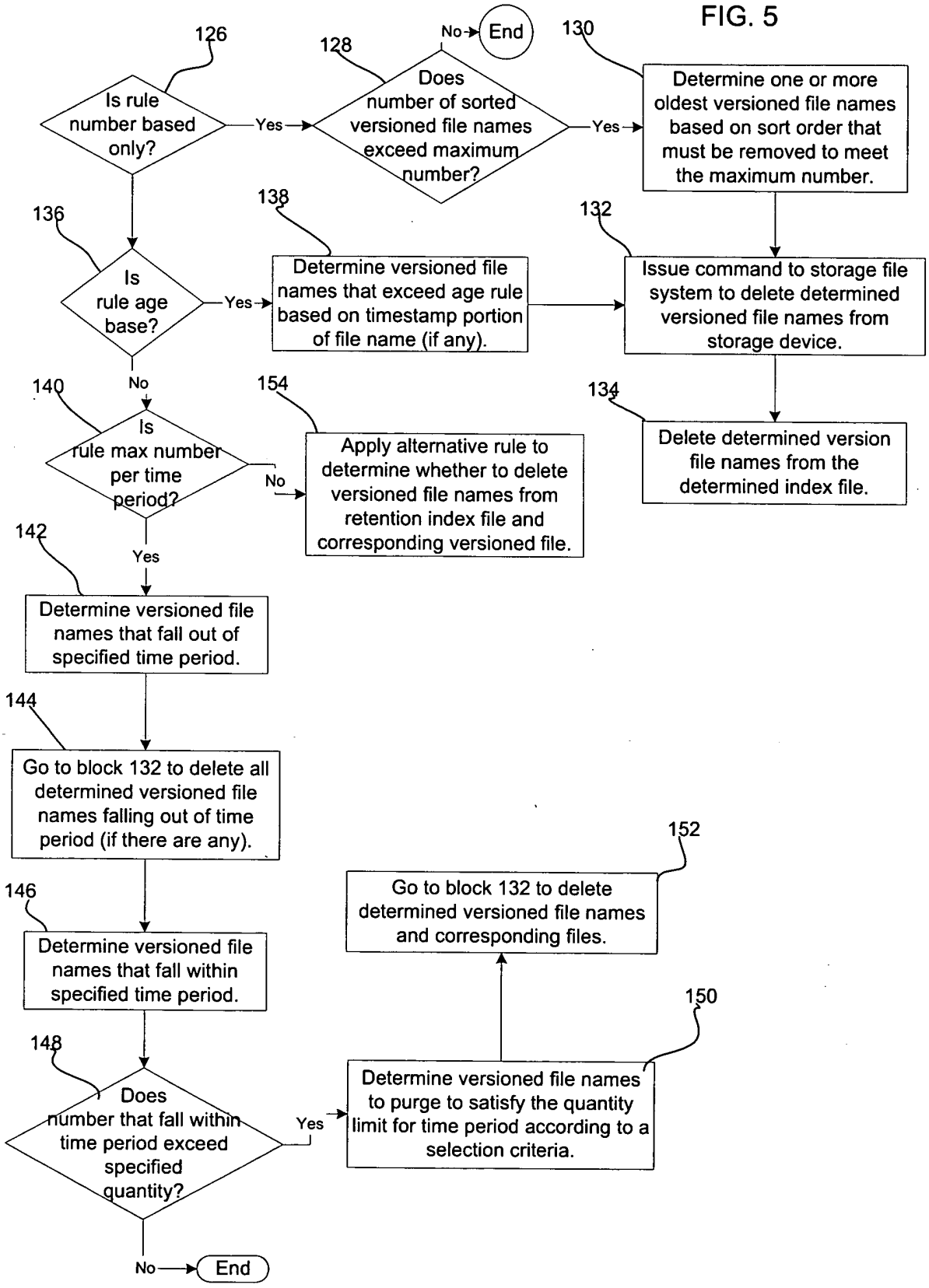
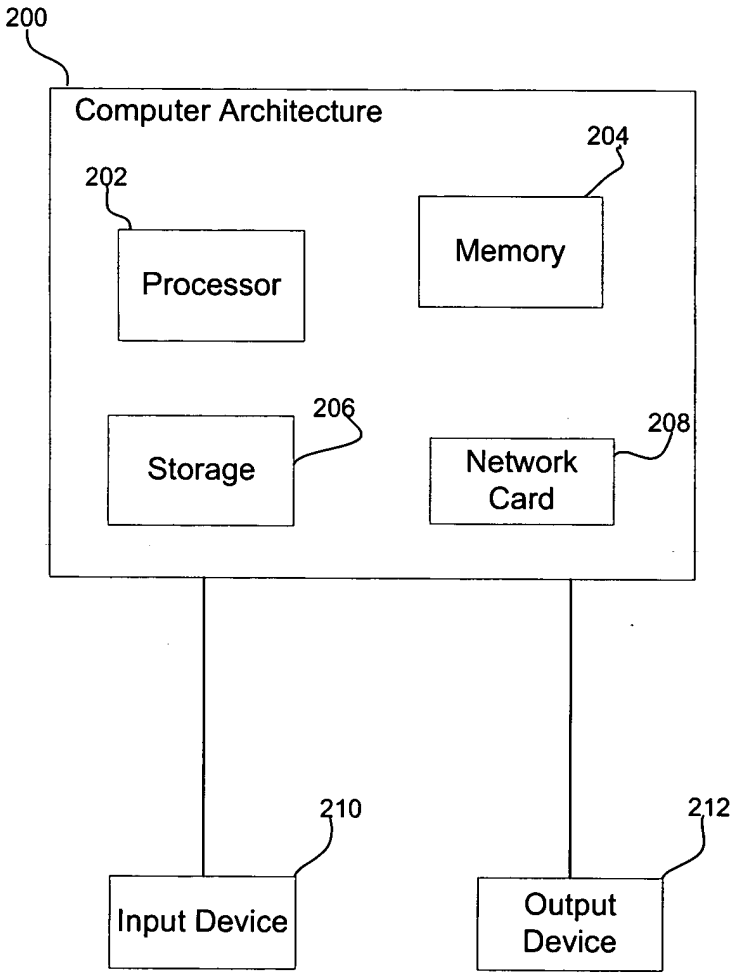

126
Is rule number based only?
Yes
128
Does number of sorted versioned file names exceed maximum number?
No
End
Yes
130
Determine one or more oldest versioned file names based on sort order that must be removed to meet the maximum number.
136
Is rule age base?
Yes
138
Determine versioned file names that exceed age rule based on timestamp portion of file name (if any).
132
Issue command to storage file system to delete determined versioned file names from storage device.
No
140
Is rule max number per time period?
No
154
Apply alternative rule to determine whether to delete versioned file names from retention index file and corresponding versioned file.
134
Delete determined version file names from the determined index file.
Yes
142
Determine versioned file names that fall out of specified time period.
144
Go to block 132 to delete all determined versioned file names falling out of time period (if there are any).
146
Determine versioned file names that fall within specified time period.
148
Does number that fall within time period exceed specified quantity?
Yes
150
Determine versioned file names to purge to satisfy the quantity limit for time period according to a selection criteria.
152
Go to block 132 to delete determined versioned file names and corresponding files.
No
End

FIG. 6


200
Computer Architecture
202
Processor
204
Memory
206
Storage
208
Network Card
210
Input Device
212
Output Device